THE MURPHY CHEMICAL COMPANY LIMITED,
WHEATHAMPSTEAD,
HERTS.

ADVISORY BULLETIN No. 9

ON

The Control of Red Spiders

on

Fruit Trees and Bushes, Strawberries, Hops and Violets.

KEEP THESE BULLETINS IN THE GRATIS FILING COVER WE SUPPLY.

Red Spider Control.

LIFE HISTORY.

There are three species of Red Spiders (Red Mites) injurious to fruit. (a) The Apple Red Spider *Oligonychus ulmi*, Koch. found on apple, plum, damson, pear and to some extent on soft fruits. (b) The Gooseberry Red Spider *Bryobia ribis*, Thom. which occurs only on gooseberry. (c) The Greenhouse Red Spider *Tetranychus telarius*, Linn. which is found on many greenhouse plants, but is also an important pest of hop, strawberry and violet and sometimes occurs on apple and peach outdoors, particularly on wall trees. The eggs and adults of all three species are extremely small, being no larger than a pin head. The adults have four pairs of legs, a short round body and biting and sucking mouth parts and are generally red in colour, but they may also vary from greyish-green to brown. They should not be confused with the adults of the Red Velvet Mite *Trombidium*, sp. which is much larger, scarlet in colour and is not injurious to plants.

(a) The Apple Red Spider lays its winter eggs in the autumn on the twigs, branches, or trunk of the tree, often crowded together in large numbers. They are spherical in shape and at first are pinkish in colour, later becoming brilliant crimson. In the spring, young spiders emerge from these eggs, feed on the leaves and after moulting several times, become adult. The adults lay summer eggs on the leaves, chiefly on the underside, these eggs, which are much paler in colour than the winter eggs, quickly hatch and several generations of adults thus occur from May to September. In the autumn winter eggs are again deposited on the twigs etc.

(b) The Gooseberry Red Spider lays its eggs in late summer on the twigs, some of these remain unhatched until the following spring, but some hatch in the autumn and the larvæ pass the winter hidden in crevices in the twigs or under loose bark. In the spring, by the time the buds unfold, all the eggs have hatched and the young spiders moult several times, become adult, lay summer eggs and several generations of adults occur before winter eggs are laid again in late summer.

(c) The Greenhouse Red Spider overwinters in the adult stage as brilliant, brick-red coloured females, often gathered together in vast numbers under the shelter of a thick webbing. In the open, they pass the winter in the soil, in crevices or cracks in hop poles, amongst litter, or under dead leaves. Eggs are laid on the underside of the leaves in the spring and several generations of pale coloured adults occur during the summer before the red coloured winter form appears again in the autumn.

NATURE OF DAMAGE.

The injury is due to the feeding of the red spiders, both larvæ and adults, which pierce the leaves and suck the sap. Affected leaves lose their healthy colour and turn yellowish, or greyish-white. Such leaves become brittle and may die; in a bad attack extensive defoliation may occur, so that growth is checked and the fruit may fail to develop properly. On gooseberry, damage occurs chiefly in spring and early summer; on apple and plum, the attack becomes serious towards the end of June and early July. On strawberry and hop and indeed on all plants, the attacks are always most serious in hot dry summers. On strawberry, in a bad attack, the plants are prevented from making proper root growth in the autumn, so that a "small leaf" condition results in the following year; in some cases plants are killed outright.

RECOMMENDATIONS FOR CONTROL.

(a) APPLE RED SPIDER.

The eggs of this pest are unaffected by Tar-Distillate winter washes, but are killed by the use of Petroleum Oil or mixed Tar-Petroleum washes. As a general rule, where routine Lime Sulphur spraying is carried out on apples then this pest does not become important. But on sulphur-shy varieties, such as Newton or Stirling, or where Copper Fungicides are used, or on plums or damsons, it may become a serious pest. In the case of a severe infestation it is advisable to destroy as many eggs as possible, by the use of a Winter Wash. The best control is obtained by the application of a Tar-distillate wash at 5—7½% concentration in December to January, to control Aphis, followed by high grade Petroleum Oil Wash at 7½%, applied to apples in March, or a month earlier to pears, plums and damsons. Where it is desired to use only one Winter Wash, then a high grade mixed Tar-Petroleum wash should be applied at 10% on apples during February and on pears, plums and damsons during January. These washes should be applied with a coarse nozzle and high pressure and the trees thoroughly drenched as for Capsid control (see Bulletin No. 8) because Red Spider eggs are laid in very inaccessible places. It is important, however, that mixed washes should be applied sufficiently early on all trees, if the buds are at all forward.

In cases where the infestation is not very severe, or where a Winter Wash cannot be used against the eggs, then on apple, where Lime Sulphur can be used, it should be applied at a concentration of 1 in 20 at pink bud stage, and again at 1 in 60 to 1 in 100, depending on the variety (see Bulletin No 6), at petal fall. On plum, Lime Sulphur should be applied at 1 in 100, ten to fourteen days after petal fall and a second appplication, given

about a fortnight later, is often advisable. In order to secure the best results a good Wetting and Spreading Agent should be used with the Lime Sulphur and the wash applied with high pressure and a medium nozzle.

On sulphur-shy varieties of apples the pest can be controlled by the use of a good White Summer Oil used at a concentration of 1—2% applied at petal fall, a second application may be given if necessary any time up to the end of June. If desired to control Apple Sawfly as well as Red Spider then add 8 ozs. Nicotine to the Oil Spray and apply when 80% of the petals have fallen. The Summer Oil Spray can also be used on plums, if desired, and should be applied ten to fourteen days after petal fall at 1—2%. A period of three weeks should always be left between the application of a Winter Petroleum Oil or a Summer White Oil and the application of a Lime Sulphur Spray.

If it is not desired to use a Summer Oil Wash or Lime Sulphur, then some authorities recommend the use of a Derris Wet Spray consisting of ground Derris Powder 1½—2 lbs., Soft Soap 5—10 lbs. (or a good Wetter and Spreader) and 100 galls. water. (The Rotenone content of the wash should be not less than ·004%). This should be applied on apple, at petal fall and again, if necessary, ten days later, or on plum a fortnight after petal fall and again, if required, ten days later.

(b) GOOSEBERRY RED SPIDER.

Where gooseberries are regularly sprayed with a good Tar-Distillate wash they do not usually suffer much from Red Spider, because a Tar wash kills all those Spiders overwintering as larvæ. Also, where Lime Sulphur or Sulphur Dust is applied to control Mildew, those Spiders are also killed which hatch in the spring from overwintering eggs. Thus, in the case of a bad

attack, the bushes should be sprayed with a reliable Tar-Distillate wash in January at 7½% concentration and then in the spring with Lime Sulphur at 1 in 30; except on Keepsake, Lancashire Lad, Cousens' Seedling, Carless and Crown Bob; on these, the Lime Sulphur concentration should be reduced to 1 in 60. Yellow Rough (Golden Drop) cannot safely be sprayed with Lime Sulphur at all. Where Lime Sulphur cannot be used, then Derris used as a wet spray as described above is recommended. Derris can also be used as a wet spray on gooseberries to control Gooseberry Sawfly caterpillars.

(c) THE GREENHOUSE RED SPIDER.

This pest is extremely hard to control on strawberries, the only useful recommendations are the frequent dusting of the plants with a good quality Sulphur Dust, commencing early before blossoming and, if necessary, after the crop is picked; or spraying them with reliable Summer White Oil at 1—2% before blossoming and again after the fruit is off.

On hops the routine Sulphur containing dusts and sprays which are normally applied to control Mould generally serve to keep the pest in check, but in the case of a severe infestation a special application must be made. A good control can be obtained by the use of a wash consisting of Liver of Sulphur ¾-1 lb., Soft Soap 5—10 lbs., water 100 galls., or the Soap can be replaced by a good Wetter and Spreader. The older leaves should be examined during the latter part of June and as soon as the first Spiders are seen in any numbers, a first application of the wash should be made. The eggs of the pest are unaffected by any wash, therefore a second application should be given 10—14 days after the first in order to control those spiders present as eggs when the first spray was applied.

On peaches a good control can be obtained by applying a high grade Sulphur Dust when the foliage is moist, or a similar spray to that used on hops, except that the Liver of Sulphur should be increased from 1 to 2 lbs. per 100 gals. Peaches should only be sprayed in the evening or during dull weather.

On violets Summer White Petroleum Oils at 1—2% have been recommended and frequently been successful, but in some cases have failed to give a good control. More recently the use of a spray consisting of Lime Sulphur 2½ gals., Nicotine 8—10 ozs., and Soft Soap 5—10 lbs. (or a good Wetter and Spreader) per 100 galls. of water, has been found to give a good control for both Red Spider and Aphis on violets. This wash will not kill the eggs, therefore, a second application should be given about fourteen days after the first, to destroy those spiders present as eggs when the first spray was applied.

December, 1934.

We supply :—

Mortegg Tar-Distillate Wash.
Mortoyle Petroleum Oil Wash.
Mortolem Tar-Petroleum Wash.
Capsomort Tar-Petroleum Wash.
REDOMITE Summer White Oil.
SULFADU Sulphur Dust.
SPREADITE Wetter and Penetrant.
ALVESCO SOLUBLE SPREADER.
ALVESCO INSECTICIDE SOAP.
ALVESCO LIME SULPHUR.
MURPHY'S 100% DERRIS POWDER.
MORTO Combined Derris and Spreader.
BRITISH NICOTINE 95/98%.
LIVER OF SULPHUR.

WE ENCLOSE ADVISORY BULLETINS Nos. 8 and 9, which should be filed in the Special Folder already supplied.

If further advice is required, write us. We supply the best advice and

THE BEST SPRAYS

Mortegg **TAR OIL WINTER WASH.** First British and Best.

Mortoyle **PETROLEUM WINTER WASH.** *See overleaf.*

Capsomort **TAR-PETROLEUM WINTER WASH.** *See overleaf.*

Mortolem **TAR-PETROLEUM WINTER WASH.** For Red Spider Control.

REDOMITE. **WHITE OIL EMULSION.** Highly refined Oil Spray that wets well.

ARSENATE OF LEAD, POWDER AND PASTE
The ALVESCO brand powder, packed in 3-lb. bags, remains in suspension for days—the particles are evenly distributed over the leaf. Contains minimum of 30% Arsenic pentoxide (As_2O_5).

LIME SULPHUR. Minimum of 25% polysulphide Sulphur. Specific gravity 1.300. Made from lime, sulphur and water ONLY.

SULFADU. Guaranteed to contain 95% Sulphur. A very fine powder, 90% passing a 300 mesh sieve.

BORDEAUX PASTE. Ideal for Scab control as a wet spray, when Sulphur is not advised.

COPPER LIME DUST. Ideal Dust for Scab on sulphur-susceptible varieties. No risk of scorch as it is completely re-acted in the factory.

ALVESCO SOLUBLE SPREADER. Used by Growers for many years, especially recommended for use with Lime Sulphur only.

SPREADITE. Ideal for use with Nicotine, where penetration of the wash is essential. A Wetter, Spreader and Sticker in powder form, cheaper in price per lb. than any other.

INSECTICIDE SOAP. The best "Soft Soap," ideal for use with Derris. Contains 7% Potash and 35 to 37% Fatty Acids.

MURPHY'S 100% DERRIS POWDER.
Guaranteed 17% ether extractable content.

Morto Combined Derris and Spreader for wet spraying.

ROTOMORT. Guaranteed 0.2% Rotenone.

NICOTINE. Guaranteed 95/98% purity and British.

By the way — NOW is the IDEAL time to use Mortegg

Mortoyle PETROLEUM WINTER WASH.

Capsomort TAR-PETROLEUM WINTER WASH.

The only economic way of Capsid Control on Apples and Black Currants is by double spraying with **Mortegg** Tar Oil Winter Wash at 7½% in December-February, followed by **Mortoyle** at 7½% in March; or by a single application of **Capsomort** at 10% in February.

We have carried out numerous experiments during the past few seasons, and Mr. G. L. Hey, M.A., our Entomologist, has conducted a number of trials in many Capsid infested areas. One of the main points investigated was the relative efficiency of Standard **Mortoyle** (a creamy-white emulsion) compared with Miscible **Mortoyle** (a clear dark fluid, containing the same oils, in the same proportion, but differently emulsified). In appearance and in the white film it gives on the tree, Miscible **Mortoyle** closely resembles **Mortegg.**

From the results of laboratory and field experiments we believe that Miscible Mortoyle has a big future before it for these reasons :—

1. The oil constituents and percentage content are identical with Standard **Mortoyle.**
2. Miscible **Mortoyle,** being more fluid, mixes more easily and wets even better than Standard **Mortoyle.**
3. As Miscible **Mortoyle** is more easily seen on the tree, there is less chance of any part being missed. This is of great practical importance, since any branches left unsprayed may lead to reduction in control obtained.

We suggest, when ordering **Mortoyle** or **Capsomort,** you try a drum of the Miscible type—the price is the same.

Mortoyle gave an average of 94%

Capsomort gave an average of 92%

control of Capsid in the Trials mentioned above—details available on request.

THE MURPHY CHEMICAL COMPANY LTD.

WHEATHAMPSTEAD
ST. ALBANS . . HERTS.

Telephone: **Wheathampstead 77-78**

Telegrams:
"ALVESCO" **Wheathampstead**